

2121

Application No. 09/771,799	Applicant(s) FRANCIS, ROBERT HENRY	
Examiner Crystal J. Barnes	Art Unit 2121	#1 #3

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED.
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

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**Status**

- 1) ☒ Responsive to communication(s) filed on 29 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 1 and 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement filed 2001 April 12 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the non-patent literature document referred to therein has not been considered.

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: reference numbers 42', 46', 50', 56', 60' and 62 in figure 2 are not mentioned in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "52" has been used to designate both "Set each element of Z stack to 0" and "Adjust  $K_{bias}$ " in figure 2. Also see page 11 2<sup>nd</sup> and 3<sup>rd</sup> full paragraphs. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### *Specification*

4. The disclosure is objected to because of the following informalities: reference number 58 on page 11 end of 3<sup>rd</sup> full paragraph should be reference number 60. Appropriate correction is required.

#### *Claim Objections*

5. Claims 1 and 2 are objected to because of the following informalities: claim numbers "A1" and "A2" should be "1" and "2" and the whereby clauses of both claims 1 and 2 should be changed to additional steps of the process. Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 1 recites the limitation "said analog controller's output" in step c of the claim. There is insufficient antecedent basis for this limitation in the claim.

*Claim Rejections - 35 USC § 101*

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 and 2 are rejected under 35 U.S.C. 101 because applicant has failed to claim a practical utility that defines a "real world" context of use. Utilities that require further research to identify or reasonably confirm a "real world" context of use are not substantial utilities.

10. Claims 1 and 2 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific, substantial, and credible asserted utility or a well established utility.

Examiner interprets that the claimed invention does not present any practical utility. Claims 1 and 2 recite the steps of a process for rapidly controlling a process variable to a set point without overshoot using a time domain polynomial feedback controller that is not applied to any practical utility.

*Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,948,950 to Rae in view of USPN 5,379,210 to Gruji et al.

As per claim 1 wherein a process for rapidly controlling a process variable to a set point without overshoot using a time domain polynomial feedback controller

comprising the steps of: a. a means for calculating an error signal by comparing a process variable to a set point; b. a means for setting said controller's output to zero if said error signal is negative; c. a means for calculating said analog controller's output using a user tuned time domain polynomial equation in a feedback configuration; d. a means for automatically converting to an integral correction for said set point maintenance based on user defined criteria; and e. a user selectable means for improving a bias tuning parameter automatically based on user defined criteria; whereby said controller moves said process variable to said set point more rapidly in applications where overshoot is not allowed requiring less energy or materials necessary to achieve said set point;

the Rae reference discloses

(see figure 1 and column 3 lines 30-37, "The control means 22 ... a temperature sensing means 26 for sensing the actual temperature of the cooking oil ...")

(see column 3 lines 42-49, "The control means 22 ... a set point means 30 and is adapted to permit an operator to select the desired set point temperature for the deep fat fryer 20 ...")

(see column 3 lines 53-63, "The control means 22 ... a microprocessor 31 ... programmed with the new formula ... can turn on and off the heating means 23 through the relay means 32 ...")

(see columns 3-4 lines 64-2, "... shutting down the operation of the heat producing means 23 should the actual temperature of the cooking oil 25 exceed a certain high temperature limit ...")

(see column 4 lines 11-15, "... a desired rate of change curve ... asymptotic to the selected set point temperature ... prevent adverse overshooting of the selected set point temperature.")

(see column 5 lines 1-22, "... the actual slope is compared with the target slope and if the actual slope is less than the target slope, the heat source 23 is energized (or merely remains energized) and, if the reverse is true, the heat source 23 is turned off ...")

The Rae reference does not expressly disclose a means for calculating said analog controller's output using a user tuned time domain polynomial equation in a feedback configuration.

The Gruji et al. reference discloses

(see column 15 lines 66-68, "An input-output form for representing differential equations ...")

(see column 16 lines 16-33, "A generalized linear differential equation ...")

(see column 17 lines 6-49, "The transfer matrix function for the input-output description of systems ...")

(see column 21 lines 32-34, "The polynomial function is the accurate characteristic polynomial of the closed-loop feedback control system.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further define the control means taught by the Rae reference with the natural tracking controller taught by the Gruji et al. reference.

One of ordinary skill in the art would have been motivated to modify the control means with the natural tracking controller so that the behavior or output of a control system was optimized with relatively minimal knowledge of the structure of function of the system being controlled.

### *Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



The following patents are cited to further show the state of the art with respect to optimization/adaptive control in general:

USPN 5,390,277 to Van Wagner et al.


USPN 4,430,606 to Otsuki et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Crystal J. Barnes whose telephone number is 703.306.5448. The examiner can normally be reached on Monday-Friday alternate Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on 703.305.0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.305.3900.

cjb  
September 24, 2003

  
ANIL KHATRI  
SUPERVISORY PATENT EXAMINER